**PERCENTAGE**

1. 64 is what percent of 80?

A.80% B. 70% C. 60% D. 64%

64/80 \* 100 = 80%

1. If 15% of 30% of 50% of a number is 90, then what is the number?

A.4000 B. 3050 C. 4400 D. 4500

Explanation:

Let the number be a

Given, 15/100 \* 30/100 \* 50/100 \* a = 90

* + 3/20 \* 3/10 \* 1/2 \* a = 90
  + a = 10 \* 20 \* 10 \* 2 = 4000.

1. 40% of a number is more than 20% of 650 by 190. Find the number?
2. 600 B. 700 C. 800 D. 900

Answer: Option C

Explanation:

(40/100) \* X – (20/100) \* 650 = 190

2/5 X = 320

X = 800

1. 60% of a number is added to 120, the result is the same number. Find the number?
2. 300 B. 200 C. 400 D. 500

Explanation:

(60/100) \* X + 120 = X  
2X = 600  
X = 300

1. If two positive numbers are in the ratio 1/8 : 1/5, then by what percent is the second number more than the first?
   * 1. 40%B. 33 1/3%C. 60%D. 66 2/3%

Given ratio = 1/8 : 1/5 = 5 : 8

Let the first number be 5x and the second number be 8x.

The second number is more than the first number by 3x.

Required percentage = 3x/5x \* 100 = 60%.

1. 40 is subtracted from 60% of a number, the result is 50. Find the number?

A.150 B. 140 C. 130 D. 110

Explanation:

(60/100) \* X – 40 = 50  
6X = 900  
X = 150

1. a. Two numbers are respectively 20% and 25% more than a third number. The percentage that is first of the second is?

80%B. 85%C. 96%D. 125%

First number is 20% more = 100+20 =120

Second number is 25% more =100+25 =125

To find the percentage = 120/125 \*100 = 96 %

b. A student erroneously multiplied a number by 2/5 instead of 5/2.What is the percentage error in the calculation?​

cross multiplying the values 2/5 \* 5/2\*100

we get = 4/25\*100= 16

Error percentage = 100-16 = 84%

1. If the numerator of a fraction is increased by 20% and its denominator is diminished by 25%, the value of the fraction is 2/15. Find the original fraction.

1/12B. 1/8C. 1/6D. ¼

Explanation:

X \* (120/100)  
---------------- = 2/15  
Y \* (75/100)  
X/Y = 1/12

1. In a factory, there are 40% technicians and 60% non-technicians. If 60% of the technicians and 40% of non-technicians are permanent employees, then the percentage of workers who are temporary is?

32%B. 42%C. 52%D. 62%

Explanation:

Total = 100  
T= 40                     NT= 60  
40\*(60/100)=24    60\*(40/100)=24  
24 + 24 = 48 => 100 - 48 = 52%

1. The population of a town is 45000; 5/9th of them are males and the rest females 40% of the males are married. What is the percentage of married females?

60%B. 50%C. 45%D. 40%

Explanation:

Male = 45,000\* 5/9 = 25,000  
Female = 45,000\* 4/9 = 20,000  
Married Male = 25,000\* 40/100 = 10,000  
Married Female = 10,000  
20,000 ------------ 10,000  
100 ------------- ? => 50%

**Percentage Increase/Decrease**

1. At a supermarket, a certain item has increased from 75 cents per pound to 81 cents per pound. What is the percent increase in the cost of the item?

Solution: pc formula

https://www.mathgoodies.com/sites/all/modules/custom/lessons/images/percent2/example3.gif

1. Four feet are cut from a 12-foot board. What is the percent decrease in length?

Solution: pc formula

https://www.mathgoodies.com/sites/all/modules/custom/lessons/images/percent2/example4.gif

**Finding 100 %**

1. 96% of the population of a village is 23040. The total population of the village is?

32256B. 24000C. 24936D. 25640

Explanation:

X \* (96/100) = 23040  
X = 240 \* 100  
X = 24000

1. In an examination 65 % of students are passed and no of failures is 420.Find the total strength?

420 \* 100 =1200



35

1. If 70 % of the students in a school are boys. And the no of girls be 504.Find no of boys.

504 \* 100 = 1680.

30

1680 \* 70 = 1176 boys.

100

1. The salary of a typist was at first raised by 10% and then the same was reduced by 5%. If he presently draws Rs.1045.What was his original salary?

900B. 950C. 1000D. 975

X \* (110/100) \* (95/100) = 1045

X \* (11/10) \* (1/100) = 11

X = 1000

**Net Percentage Change:**

1. The salary of a worker is first increased by 30% and afterwards reduced by 30%. What is net change in his salary?

90% increaseB. 45% increaseC. 9% decreaseD. Same as before

Explanation:

a+b+ab/100 = 30 – 30 - (30 \* 30)/100 = 9% decrease

1. The percentage increase in the area of a rectangle, if each of its sides is increased by 20%

| **A)** 22% | **B)** 33% |
| --- | --- |
| **C)** 44% | **D)** 55% |

successive apply

20+20+20×20/100

40+4

44%

1. If the diameter of a circle decreases by 10%, what will be the percentage change in the area of the circle?

A + B + AB/100 = Net change

A = B = -10%

Net change ,= -10 - 10 + (-10 x -10)/100

= -19%

(Or)

Let the diameter of a circle, A be 20 cm. Its area = 100\* pi

If the diameter is reduced by 10%, its radius will be 9 cm, the Circle B will have its area = 81\*pi

So the % reduction in area of Circle B to that of the area of Circle A = (100–81)\*100/100 = 19%.

**Marks based questions:**

1. An engineering student has to secure 36% marks to pass. He gets 130 marks and fails by 14 marks. The maximum No. of marks obtained by him is?

300B. 400C. 350D. 500

Explanation:

130  
               14  
             -------  
36% ------ 144  
100%------ ? => 400

1. In an examination in which full marks were 500. A got 25% more than C, C got 20% less than D. If A got 360 marks. What percentage of full marks was obtained by D ?

a)72% b)80% c)50% d)60%

Marks obtained by A = 360 marks

marks obtained by C=360/125×100

= 288 marks

marks obtained by D=288/80×100

= 360 marks

Required % marks obtained by D

=360/500×100=72%

1. For an examination, it is required to get 36% of maximum marks to pass. A student got 113 marks and failed by 85 marks. The maximum marks for the examination are:

a)400 b)450 c)500 d)550

36% marks = 113 + 85

⇒ 36% = 198

100 % = 550.

1. A student has to obtain 33% of the total marks to pass. He got 125 marks and failed by 40 marks. The maximum marks are :

A) 500 B) 600

C) 800 D) 1000

Given that the student got 125 marks and still he failed by 40 marks

* + The minimum pass mark = 125 + 40 = 165

Given that minimum pass mark = 33% of the total mark

* + total mark =33/100 =165
  + total mark = 16500/33 = 500

1. In an examination, a student scored 30% marks from the first paper out of 180.How much % should he score from the 2nd paper out of 150 if he is to get an overall average of at least 50 %?

At Least 50 % = (180 + 150)/2 = 165

180 \* 30 =54

100

Remaining = 165 - 54 = 111

Required Percentage = 111 \* 100 = 74

150

1. In an examination a student scored 30 % marks from the I paper out of 150.How much % should he score out of 120 if he is to get an overall percentage of at least 50 %?

At Least 50 % = 150 + 120 = 270/2 = 135

Paper I = 30 \* 150 = 45

100

Remaining = 135 – 45 = 90

Required percentage = (90 \* 100)/120 = 75 %

1. In an examination a student scored 30 % marks from I paper out and he failed by 15 marks and another student who scored 40 % mark and he obtained 35 marks more than pass mark.Find pass mark?

Maximum mark = Addition of difference in pass mark.

* + - 1. Difference of scoring percentage

= 50 \* 100 = 500

10

1. A candidate who gets 30% of the marks fails by 50 marks. But another candidate who gets 45% marks gets 25 marks more than necessary for passing. Find the number of marks for passing?

150 B. 200 C. 250 D. 275

30% ------------ 50

45% ------------ 25

----------------------

15% ------------- 75

30% -------------- ?

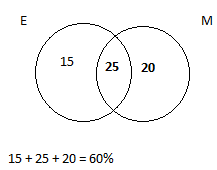
150 + 50 = 200 Marks

1. In an examination 40% failed in Hindi, 45% failed in English. If 25% students failed in both the subjects. Then the percentage of failed students is?

15%B. 65%C. 60%D. 70%

Explanation:

Explanation:



1. In an exam 42 % of students failed in Hindi.52 % failed in English.If 17 % failed in both, find % of students passed in both?

Calculating according to a vern diagram

52=hindi fail

42=english fail

17=both subjects fail

So only hindi fail=52-17=35

And only English fail=42-17=25

So failures in hindi +failures in english=25+35=60+17 = 77(you have to add the people who failed in both once)

Considering total strength as 100 passing percentage would be 100-77 = 23%



1. If x is 10% more than y, then by what percent is y less than x?

a)9(1/11)% b)7(1/11)% c)8(1/11)% d)10(1/11)%

10/110 \* 100 = 9(1/11)%

1. If A’s height is 20% more than B’s height, by how much percent less is B’s height than that of A?

a)11.11% b)33.33% c)16.66% d)22.22%

20/120\*100 = 16.66 %

1. B got 20% marks less than A. What percent marks did A got more than B?

a)20% b)25% c)12% d)80%

20/80 \*100 = 25%

1. If A's income is 20 % less than B's income .In how much % B's income is more than that of A?

20 \* 100 = 25 %

80

**Consumption based Questions:**

1. The price of onions increases by 25%, by what percent should a housewife reduces the consumption so that expenditure on onions can be the same as before?

a) 35% b) 20% c) 55% d) 45%

25

——— × 100 = 20 %

125

1. If the duty on an article is reduced by 40% of its present rate, by how much percent must its consumption increase in order that the revenue remains unaltered ?

So the required percentage increase is:

{40/(100-40)} x 100

= (40/60) x 100

=200/3%

1. Price of a commodity has increased by 60%. By what percent must a consumer reduce the consumption of the commodity so as not to increase the expenditure?

37%

37.5%

40.5%

60%

* + 60/160 \*100 = 37.5 %

1. If the price of a commodity is decreased by 20% and its consumption is increased by 20%, what will be the increase or decrease in the expenditure on the commodity?

4% increase 4% decrease 8% increase 8% decrease

**Answers: (b)**

Let the CP of each article = Rs. 100

Consumption = 100 units

Initial expenditure = Rs. (100 × 100) = Rs. 10000

New price of article = Rs. 80

Consumption = 120 units

Expenditure = Rs. (120 × 80)= Rs. 9600

Decrease = Rs. (10000 – 9600) = Rs. 400

∴ Percentage decrease = {(400 x 100)/ 10000} = -4%

**Alternate Method:**

Here, the price is decreased by 20% and the consumption is increased by 20%.

So, the net change in expenditure

= {x – y – (xy /100)}

= {20 – 20 – (400/100 )} = -4%

Hence, the expenditure decreased by 4%.

1. When the cost of rice increases by 25 %, a man reduces his annual consumption by 10 %. Find the % change in his annual expenditure on rice?

12.5 %B. 11.11 %C. 15 %D. 6.25 %

* + Explanation: % change in the annual expenditure = 1.25 \* 0.9 = 1.125
  + ⇒ Net increase of 12.5 %
  + Alter Method
  + a+ b+ ab /100 25 - 10 – (25 \* 10)/100 = (-12.5)%

**Income based questions**

1. A person spends 1/5th of his income on the education of his children, and 20% of the remaining on food. If he is left with Rs.576 find his income?

Rs.900B. Rs.800C. Rs.500D. Rs.1000

Explanation:

X \* 4/5 \* 80/100 = 576  
X = 14400/16  
X = 900

1. Radha spends 40% of her salary on food, 20% on house rent, 10% on entertainment and 10% on conveyance. If her savings at the end of the month are Rs 1500, then what is her monthly salary?

%savings = 100- (40+20+10+10) = 20%

20% of monthly salary = 1500

Hence monthly salary = 7,500

1. Ajay spends 45% of his monthly income on household items, 25% of his monthly income on buying cloths, 7.5% of his monthly income on medicines and saves the remaining amount which is Rs. 9000. Find his monthly income.

Rs. 40000B. Rs. 36000C. Rs. 50000D. Rs. 45000

Explanation:

Let the monthly income of Ajay be Rs. x

Savings of Ajay = x - (45 + 25 + 7.5)/100 \* x = 22.5/100 x

22.5/100 x = 9000

x = 40000.

1. A man spends 10% of his income in house rent, 20% of the rest on his children’s education, 25% of the rest miscellaneous causes. If he now possesses Rs. 1944 then his income is?

Rs.3600B. Rs.4000C. Rs.4500D. Rs.3000

Explanation:

X \* (90/100) \* (80/100) \* (75/100) = 1944  
X \* 0.9 \* 0.8 \* 0.75  
X = 1944/0.54  
X = 3600

1. A person gave 20% of his income to his elder son, 30% of the remaining to the younger son and 10% of the balance, he donated to a trust. He is left with Rs. 10080. His income was :
   * 1. Rs. 50000
     2. Rs. 40000
     3. Rs. 30000
     4. Rs. 20000

**Solution:**

X\*(80/100)\*(70/100)\*(90/100)=10080

After cancellation we get

X=(10080\*5\*100)/(9\*7\*4)

X=160\*5\*25

X=800\*25

X=20000

1. A man sends 75 % of his income. If his income is increased by 20%,he increases his expenditure by 10 %.His savings are increased by how much %?

Let the total income be 100

So he spends 75 and saves 25

Now his income is increased by 20% so new income is 120

His expenses increases by 10% so 75 \* 10/100 = 7.5

Thus he spends 82.5 out of 120

He saves 120 - 82.5 = 37.5

Thus % increase in savings = (37.5–25)/25 \* 100 = 50%

**Votes based Questions**

1. In an election between 2 candidates, one gets 62 % of votes and he is elected by a majority of 144 votes .Find the no of votes.

62 % - 38 % = 24 %.

144 \* 100 = 600

24

1. A candidate got 35% of the votes polled and he lost to his rival by 2250 votes. How many votes were cast?

7500B. 5000C. 6000D. 3500

Explanation:

35%----------- L  
65%----------- W  
------------------  
30%----------2250  
100%--------- ? => 7500

1. In an election between 2 candidates ,one gets 30 % of the voter and is defeated by 15000 votes. Find no votes for the winning candidate?

| 40 % | --🡪15000 |
| --- | --- |
| 1. -> | --🡪 ? = 26250. |

1. In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, the number of valid votes that the other candidate got, was :

2500 b) 2700 c) 2900 d) 3100

Valid votes = 100% - 20% = 80% = 6000

Candidate A = 55 %

Candidate B = 45 % = 45% 0f 6000 = 2700.

1. 10 % of voters did not cast their votes in an election between 2 candidates.10 % of the polled were invalid and one gets 54 % of the total valid votes and he is elected by the majority of 1620 votes. Find the number of votes enrolled in the voter's list?

Out of valid vote,

Candidate A = 54%

Candidate B = 46 %

Difference = 8 %

8% ----> 1620

100% -----🡪 ?

1620\*100 = 20250

* + 

8

* + 20250 \* 100 = 22500

90

* + 22500 \* 100 = 25000

90

(Or)

8% of [90% of ((90% of x)] = 1620

8 \* 90\* 90

――――― × X = 1620

100\*100\*100   
⇔ x = 25000

**Population based questions:**

1. The population of the town increased by 10 % in the 1st year and 20 % in the 2nd year. The population after 2 years will be ? The population is 8000?
   * 8000 10 % = 800
   * 8000 + 800 = 8800
   * 8800  20% = 1760
   * 8800 + 1760 = 10560
2. The population of the town increased by 5% every year. If the pesent population is 15435?

15435 \* 100 \* 100 = 14000

* + 105 105

1. **The population of a town increased from 1,75,000 to 2,62,500 in a decade. The average percent increase of population per year is:**
   * 1. 4.37%
     2. 5%
     3. 6%
     4. 8.75%

Increase in 10 years = (262500 - 175000) = 87500.

| Increase% = | https://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 87500 | x 100 | https://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% = 50%. |
| --- | --- | --- | --- | --- |
| 175000 |

| https://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Required average = | https://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 50 | https://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% = 5%. |
| --- | --- | --- | --- |
| 10 |